that Applicant's amendment necessitated the new grounds of rejection presented in the Office Action. Accordingly, there is an inconsistency in the Office Action. Applicant assumes that the action is non-final, as indicated on the Office Action Summary since the alleged grounds in Section 4 of the Office Action for making the action final, i.e, that Applicant's amendment necessitated the new grounds of rejection, is inaccurate. Particularly, in response to the previous Office Action, Applicant did not amend any of the pending claims and only added new Claims 4-6 which are method claims corresponding in substance to the previously existing apparatus claims. The fact that new claims 4-6 did not necessitate any new grounds for rejection is expressly confirmed in the last paragraph of Section 3 of the Office Action in which the Office states "as for claims 4-6, a corresponding method for use in the disclosed system is rejected for the reasons given in the scope of the system claims 1-3 as already disclosed above."

Accordingly, if the Office is processing this application as if the March 13, 2003 Office Action is a Final Office Action, the Office should officially withdraw it and redesignate the Office Action as non-final.

CLAIM REJECTIONS

The Office rejected all pending claims, Claims 1-6, under 35 U.S.C. §1.03(a) as being unpatentable over Blasing in view of Langston. Blasing has been previously cited. Langston is a newly cited reference.

The present invention relates to an LMDS antenna array having multiple radiating antenna elements wherein the antenna elements are adjusted in phase and

amplitude to achieve certain novel radiation patterns. Particularly, claims 1 and 4 recite that the antenna elements are adjusting in phase and amplitude to (1) mitigate radiation above the horizon; and (2) decrease attenuation in radiating power with distance from the antenna. Claims 2 and 5 depend from Claims 1 and 4, respectively, and further add that the antenna elements are adjusted in phase and amplitude to mitigate nulls between lobes of combined radiated signals. Finally, Claims 3 and 6 depend from Claims 1 and 4, respectively, and add that the antenna elements are adjusted in phase and amplitude to reduce excess signal power at near range.

The Office asserted that Blasing discloses a local multipoint distribution service system (LMDS) having an antenna for transmitting a signal of reused frequency within a specified range from the antenna, the antenna having multiple radiating antenna elements, each of the antenna elements being adjusted in phase and amplitude of radiated signals across the radiating elements to mitigate radiation above the horizon, i.e., radiation or signal power output can be attenuated above the horizon and each of the antenna elements being adjusted in phase and amplitude of radiated signal therefrom to decrease attenuation in radiating power with distance from the antenna (see column 21, lines 40-53: to insure the attenuation among radiated power from nearby antennas).

The Office further stated that:

> Blasing might not clearly show the step of 'each of the antenna elements being adjusted in phase and in amplitude of radiated signal across the radiating elements to mitigate radiation above the horizon' as argued by the Applicant; however, in the same field of endeavor, Langston clearly teaches that the phase shifts and the amplitude of radiated signals across the radiating elements of an antenna array (Figs. 6-7) can be adjusted, for example, the stubs 83 can be adjusted for the phase shifts and the

amplifiers 67 for amplifying or amplitude adjusting for an antenna array in an LMDS system (col. 6/lines 8-22 & col. 6/line 23 to col. 7/line 22 for LMDS system). Therefore, it would have been obvious to one of ordinary skill in the art at the time that the invention was made to modify Blasing's system with Langston's technique of adjusting in phase and amplitude as disclosed in order to obtain an enhanced LMDS system that can adjust the phase and amplitude of radiated signals across the radiating element of an antenna array to mitigate radiation above the horizon for decreasing the attenuation in radiated power with distance from the antenna as desired.

Applicant respectfully traverses this rejection. First, there is an inconsistency in the rejection. Particularly, the Office asserted that, in Blasing, each antenna element is adjusted in phase and amplitude to mitigate radiation above the horizon. However, in the next paragraph, the Office admits that "Blasing might not clearly show '. . . each of the antenna elements being adjusted in phase and amplitude of radiated signal across the radiating elements to mitigate radiation above the horizon.'"

For purposes of this argument, Applicant will assume that the Office does concede that Blasing does not teach this feature since the Office clearly seems to be relying on Langston for teaching this feature and because Applicant, in response to the previous Office Action, already explained that Blasing does not teach this feature.

As a preliminary matter, it should be noted that the assertion that Blasing teaches adjusting the phase and amplitude of the radiated signal to decrease attenuation in radiated power with distance from the antenna was asserted in the previous Office Action and was traversed by Applicant. It should further be noted that the Office did not address Applicant's arguments from the previous response in this regard. Thus, Applicant proceeds in the argument below without guidance from the Office as to where, if at all, the Office disagrees with Applicant's previous assessment

of Blasing. Accordingly, some of the argument below may be duplicative of previous arguments presented by applicant.

The Office asserted that Langston teaches adjusting the phase and amplitude of the radiated signal across the radiating elements to mitigate radiation above the horizon in Figs. 6-7 and column 6, line 8 - column 7, line 22 and that Blasing teaches adjusting the phase and amplitude of the radiated signal across the radiating elements to decrease attenuation in radiated power with distance from the antenna at column 21, lines 40-53.

Turning first to the issue of whether Langston teaches adjusting the phase and amplitude of the signal radiated by the radiating elements to attenuate the output signal above the horizon, the most pertinent portion of the cited part of Langston appears to be column 6, lines 9-22. That portion of Langston is reproduced below for convenient reference.

> In order to form the narrow vertical antenna pattern, it is necessary that the linear array be phased in a proper proportion between each of the 20 radiating patches 30, and this is accomplished by phase shifters 73 between the amplifiers 67 and the antenna radiators 30 as represented in FIG. 9. One amplifier 67 may be used for all twenty radiators 30 of a linear array as shown in FIG. 10 and 12, or two amplifiers as shown in FIG. 11–one for each ten radiators. The amplification preferably is done as illustrated in FIG. 12 with amplifiers for each of the antenna radiators 30 separately. The amplification may also be done by power dividers dividing up the signal to amplifiers and then combining the signals. The phase shifts can be adjusted by the distance between the stubs 83 of FIG. 4.

There does not appear to be any discussion of adjusting the amplitude among the radiating elements in this section of Langston. With respect to the amplitudes, this

section of Langston discloses three embodiments represented, respectively, by Figures 10, 11 and 12. In Figure 10, one amplifier drives all the radiating elements. In Figure 11, half of the radiating elements are driven by a first amplifier and half are driven by a second amplifier. Finally, in Figure 12, each radiating element is driven by a separate amplifier. All three embodiments are mentioned in column 6, lines 9-22. However, there is no discussion whatsoever of making the amplification factor of any of the amplifiers different from any of the other amplifiers. In fact, all three embodiments are discussed in such a manner that, contrary to the Office's assertion, it implies that each radiating element is driven with the same amplification. Particularly, in the Figure 10 embodiment, in which all of the radiating elements are driven by a single amplifier, there cannot be any amplitude adjustment between the radiating elements. Since there is no discussion of the actual amplification provided to the radiating elements in connection with any of the three embodiments, there is no reason to conclude that the amplification is the same for all three embodiments. Since we know for a fact that one of the embodiments cannot possibly provide adjustment of amplification among the different radiating elements, he only logical conclusion is that Langston does not contemplate such a possibility and , in fact, if anything, teaches the opposite of what is claimed, i.e., no adjustment of amplification among the radiating elements. Accordingly, contrary to the Office's assertion, this limitation of claims 1 and 4 clearly is not found in Langston,.

Further, while there is a discussion of adjusting the phase between the radiating elements in this portion of Langston, the purpose of that adjustment is to form a "narrow vertical antenna pattern" and not to attenuate radiation above the horizon.

Accordingly, Langston does not disclose either of the teachings for which it has been cited. Therefore, claims 1 and 4 clearly patentable distinguish over the asserted combination of references.

Turning to the issue of phase differentiation between the radiating elements to attenuate amplification above the horizon, Applicant notes that the Office has not even asserted that Langston teaches phase differentiation for the purpose of attenuating the signal above the horizon. Rather, the Office has merely asserted that Langston teaches phase differentiation in an LMDS system and that it would be obvious to use this teaching of Langston in Blasing to attenuate radiation above the horizon. However, the Office Action contains no discussion as to the motivation to use phase differentiation, as allegedly taught by Langston, to attenuate radiation above the horizon where neither Langston or Blasing contain any discussion of attenuating radiation above the horizon. Accordingly, the obviousness rejection based on the combination of Blasing and Langston fails to state a prima facie obviousness case. Particularly, the rejection fails the most basic requirement of an obviousness rejection, i.e., that the references teach each claim limitation. The references do not teach adjusting phase to attenuate radiation above the horizon. Langston teaches adjusting phase to form a narrow vertical antenna pattern, not to attenuate radiation above the horizon.

Accordingly, the rejection of claims 1 and 4 fails because the prior art of record does not disclose either (1) adjusting amplitude for any purpose or (2) adjusting phase to attenuate radiation above the horizon.

With respect to dependent claims 2, 3, 5, and 6, the Office has simply reasserted its previous assertions that Blasing teaches the features claimed in those claims.

These claims depend from claims 1 and 4, respectively, and thus distinguish over the prior art for the reasons given above with respect to claims 1 and 4. Furthermore, as addressed in the previous response, Blasing does not teach the features claimed in claims 2, 3, 5, and 6 in any event.

Claims 2 and 5 recite that the antenna elements are adjusted in phase and amplitude to mitigate nulls between lobes of combined radiated signals collectively from the antenna elements. As noted in response to the previous Office Action, the Office is asserting that Blasing teaches a system in which "the maximum and minimum power level is maintained by implementing the low sidelobe or shaped beam antennas in adjacent sectors." Applicant has reviewed the cited portions of Blasing and is unable to find any discussion of nulls between lobes, let alone mitigation of them. Furthermore, it is unclear what is meant by the Office's statement that, in Blasing, "the maximum and minimum power level is maintained by implementing the low sidelobe or shaped beam antennas in adjacent sectors" or what relevance such a disclosure would have to the claimed feature. Furthermore, even if Blasing did teach "implementing the low sidelobes or shaped beam antennas in adjacent sectors", to the extent understood by the Applicant, this would seem to be very different and possibly the opposite of **minimizing** nulls **between** lobes as it seems to that such a pattern would increase nulls between side lobes.

Accordingly, claims 2 and 4 distinguish over the prior art for all of the reasons set forth above in connection with Claim 1 from which it depends as well as the reasons discussed immediately above in connection with the limitations of Claims 2 and 5.

With respect to claims 3 and 6, which add the limitation that the antenna elements are adjusted in phase and amplitude to reduce excess signal power at near range, the Office has asserted that this is taught by Blasing in column 22, lines 35-50 by the fact that Blasing discloses reducing excess power output at near range or at adjacent sectors by eliminating unwanted energy from using low sidelobe antennas. Once again, the cited section of Blasing does not appear to have anything to do with the subject matter at issue, namely, reducing excess signal power at near range. This section of Blasing deals with gain as a function of angle. Furthermore, and in any event, even if taught in Blasing, the asserted teaching of reducing excess power "by eliminating unwanted energy from using low sidelobe antennas is very different than what is claimed. Particularly, it relates to radiation as a function of the angle of radiation, not distance.

The claimed feature is discussed on page 6, line 17 - page 7, line 12 and is demonstrated in Figure 1, most notably by the difference between trace 6 (prior art) and trace 7 (invention) in the 0 to 1000 meter portion of the graph.

Accordingly, claims 3 and 6 distinguish over the prior art for all of the reasons set forth above in connection with claims 1 and 4, from which they depend, respectively, as well as the additional reason set forth immediately above.

In view of the foregoing remarks, this application is now in condition for allowance. Applicant respectfully requests the Examiner to issue a Notice of Allowance at the

earliest possible date. The Examiner is invited to contact Applicant's undersigned counsel by telephone call in order to further the prosecution of this case in any way.

Respectfully submitted,

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